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SPECIFICATION FOR DATAPHONE BUFFER

EQUIPMENT

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1. This is based on information contained in "Requirements for On Line dated 3rd May, 1962 and "Design Parameters of On Line Measuring Equipment output" undated.

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2. The output sequence given in the latter document totals 36 characters including six X values with sign and six Y values with sign. Since the equipment has four axes there are six X_1 values with sign, six X_2 values with sign, six Y_1 values with sign and six Y_2 values with sign, giving a total of 50 characters. It is assumed that this maximum number of characters have to be dealt with.

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3. Provision can be made if required to blank out groups of X and Y values. More details of this should be specified by the customer.

4. It should be noted that the sign of the X and Y values will always be positive on the present type of digitiser, and although provision can be made to switch between a + and - symbol this appears to be a redundant requirement.

5. The starting sequence including dataphone interrogation would use either relay or solid state logical elements.

6. A 1200 cycle per second signal would be generated continuously from a crystal controlled oscillator.

7. The selection of groups of characters, characters within each group, and serialisation of each character would be carried out by three decade ring counter units used as shift registers. The proposed grouping is as follows:-

Group 1	S.O.M - last instruction character	6 characters
Group 2	sign and X_1 values	7 characters
Group 3	sign and X_2 values	7 characters

Group 4	sign and Y ₁ values	7 characters
Group 5	sign and Y ₂ values	7 characters
Group 6	machine identifiers	3 characters
Group 7	6 12 position rotaries	6 characters
Group 8	6 12 position rotaries and MPC	7 characters

8. If standard decades are used throughout there will be some dead time at the end of each group and at the end of the sequence. The use of a non standard heptade and octade ring would reduce waste time to a minimum, saving approximately .4 second per operation.
9. Encoding would be carried out by three buffer stages and a diode encoding matrix which would present +8 volt and -8 volt signals to the Dataphone.
10. Message parity count would be produced by seven bistable circuits initially set to 0 and triggered to 1 and 0 respectively by each successive mark signal.
11. The receiver for "acknowledge" or "error" signal would consist of a relaxation oscillator of natural frequency 1200 c.p.s. triggered by the incoming start pulse. A decade ring shift register would set up a staticiser corresponding to the incoming character. This would be decoded and take the necessary action to reset buffer storage or repeat message.
12. Logic associated with the finishing sequence would use either relay or solid state logical elements.
13. The optional typewriter output would probably operate independently of the Dataphone circuitry if relay logic is used. If all solid state some circuitry would be shared. More details of the typewriter sequence are required.

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14. It is understood that all operator controls, switches, etc. will be fitted to a panel on the machine. Liaison will be required on exact switch types and lead lengths.

15. The Dataphone buffer unit would be supplied with its own stabilised power supply unit occupying one 8 3/4 inch and one 7 inch panel height respectively. The typewriter unit with power supply for typewriter solenoids will each occupy a seven inch panel height. All units will be accommodated in the existing console.

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